



News Release

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New Use for CRESS Technology Improves Soldiers Safety

ABERDEEN PROVING GROUND, Md. – It happens too often, convoys of American troops delivering supplies, water, bandages, blankets, to our troops stationed in remote locations. Then, seemingly out of nowhere, disaster strikes as the convoy comes under attack and the lives of so many people, friends, family, soldiers, are forever changed.

The lives of soldiers in combat depend on them being able to react to both what can and cannot be seen. More than half of Americans killed or wounded during combat in the Iraq and Afghanistan conflicts have been victims of improvised explosive devices (IEDs) according to data from the Pentagon's Joint IED Defeat Organization or JIEDDO. To combat this deadly problem the U.S. Army Edgewood Chemical Biological Center (ECBC) has developed the handheld Colorimetric Reconnaissance Explosive Squad Screening, known as a CRESS kit.

The current design of the CRESS kit allows soldiers, first responders and other users to test for compounds like ammonia and nitrates, which are commonly found in fertilizers. These compounds are common in IEDs. However, since the military has become better equipped to test for these common IED materials, the enemy has started to make IEDs out of other explosive materials, like carbohydrates or sugars.

IED carbohydrate compounds of particular interest include sucrose, fructose and glucose. Sucrose is commonly known as table sugar; fructose is a natural sugar found in many fruits and vegetables, which is usually added to soda and fruit-flavored drinks; and glucose is a sugar found in the blood and diabetic medications. The goal of this new CRESS is to have a simple; light-weight technology that can detect both the common IED compounds and these new carbohydrates based ones as well.

“It is important that our military members stay ahead of the existing threat. Our research allows for a current technology to be expanded, encompassing the newest threats,” said Lynn Hoffland, a chemist at ECBC.

The CRESS kit is a pocket-sized screening kit that uses color-changing technology to detect homemade precursors such as ammonium nitrate, commonly used in improvised explosives. The kit has two plastic halves that fold together and snap securely. It offers a compact, about the size of a deck of cards, lightweight and disposable solution that

produces colors when snapped closed and the liquid-containing vials are cracked open. These colors can represent the presence of harmful mixtures in less than one minute. The concept of this kit is mirrored after the M256 chemical agent detector kit, which is used to detect and identify blood, blister and nerve agents. This tool is used after soldiers have received other warnings, such as detector alarms, about the possible presence of chemical warfare agents and have responded by putting on protective clothing and masks.

The initial detection test results have been very successful with the CRESS showing the ability to change colors, indicating the presence of these carbohydrate compounds. In August 2014, ECBC received a safety confirmation for the CRESS kit allowing for unrestricted use by the U.S. forces in support of Operation Enduring Freedom.

“This technology will enhance our soldier’s capability by making them able to detect a broad range of IED materials with just a simple amount of training,” said Stan Ostazeski, a chemist for ECBC. “This will allow uniformed officers to have a stronger case in detaining suspects on charges of using these common materials with criminal intent.”

This kit is a perfect example of how researchers at ECBC are taking proven scientific concepts and combining them with materials that are both innovative and intuitive to protect Soldiers and save lives.

For more information about ECBC, visit <http://www.ecbc.army.mil/>.

ECBC is the Army’s principal research and development center for chemical and biological defense technology, engineering and field operations. ECBC has achieved major technological advances for the warfighter and for our national defense, with a long and distinguished history of providing the Armed Forces with quality systems and outstanding customer service. ECBC is a U.S. Army Research, Development and Engineering Command laboratory located at the Edgewood Area of Aberdeen Proving Ground, Maryland. For more information about the Edgewood Chemical Biological Center, please visit our website at <http://www.ecbc.army.mil> or call (410) 436-7118.

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